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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,417	03/27/2006	**John William Green**	P71002US0	2948

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EXAMINER	
COX, ALEXIS K	

ART UNIT	PAPER NUMBER
3785	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/573,417	GREEN ET AL.	
	Examiner	Art Unit	
	ALEXIS COX	3785	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *34-63* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *34-63* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-33 have been canceled; claims 34-59 and 61-63 are rejected; claim 60 has been withdrawn without traverse.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 34-56 and 61-63 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kovach et al (US Patent No. 2,951,641) in view of Vinson (US Patent No. 2,526,099) and Grohe et al (US Patent No. 5,960,828).

Regarding claims 34 and 35, Kovach et al discloses a mixing valve (10, see column 1 line 51) comprising a mixing chamber (21, see column 2 lines 54-55), a hot liquid entry port into said chamber (passage from 18 to 21, see column 1 lines 56-57), a first cold liquid entry port into the chamber (passage from 20 into 21, see column 1 lines 56-57), an outlet from the chamber (52, see column 2 lines 30-31), an outlet passage in communication with the outlet of the chamber (53, see column 2 lines 31-32), flow control means within the chamber for altering proportions of hot and cold liquids admitted through the entry ports into the chamber at any rate of combined output flow (28, see column 2 lines 17-19), and a temperature sensing device (46, see column 2 lines 1-2) adapted to sense the temperature of the output of the mixed liquids from the chamber for controlling the flow control means so that the output temperature at all output flow rates from the chamber does not exceed a selected maximum temperature (see column 2 lines 14-19). Additionally, Kovach et al discloses a stationary distributing member comprised of immobile valve seats, and a moveable distributing member comprised of the mobile valve parts. Kovach et al further discloses a second hot liquid entry port controlled by the flow control means which communicates with the output passage of the device downstream from where the temperature of the output flow from the chamber is sensed (see column 2 lines 53-61).

It is noted that Kovach et al does not explicitly disclose a second cold liquid entry port controlled by the flow control means which communicates with the output passage of the device downstream from where the temperature of the output flow from the chamber is sensed. As it is old and well known to use a cold liquid bypass in thermostatic mixing valves to prevent scalding, as shown by Vinson, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an equivalent cold water bypass in the valve of Kovach et al equivalent to the hot water bypass of Kovach et al in order to prevent scalding. This bypass would also control the second cold liquid entry port indirectly from the movement of the single lever, as the lever determines proportions entering from the hot and first cold entry ports, and this determines the sensed temperature which determines the opening degree of the second cold liquid entry port.

It is noted that Kovach et al does not explicitly disclose the presence of a single lever which is operated to control the proportions of hot and cold liquid introduced into the hot liquid entry port and the first cold liquid entry port.

Grohe explicitly discloses a single-lever mixing valve which is thermostatically controlled (see column 2 lines 15-23), and makes it clear that these are common.

It would have been obvious to one of ordinary skill in the art at the time of the invention to operate the movable distributing member of Kovach et al, which does not specify whether one or two levers or handles are used, with a single lever controlling the proportions of hot and cold liquid which are introduced into the hot liquid entry port and first cold liquid entry port of the valve because they are appreciated by users.

Regarding claim 36, the valve of Kovach et al comprises a body supporting the movable and stationary distributing members (external portion of valve, see figure 1); sealing means to seal between parts of the movable and stationary distributing members (31, 32, see column 1 lines 58-65), the stationary distributing member comprises a hot liquid entry port (14, see figure 1), a cold liquid entry port (16, see figure 1), a hot liquid outlet port (passage from 14 to 18, see figure 1), a first cold liquid outlet port (passage from 16 to 20, see figure 1), a second hot liquid outlet port (passage from 14 to 60, see figure 1), and wherein the movable distributing member includes a hot liquid transfer cavity (18, see figure 1), a cold liquid transfer cavity (20, see figure 1), and wherein the mixing chamber is a convergence space formed in the body (21, see figure 1) and the hot liquid entry port and cold liquid entry ports are formed in the body and communicate indirectly with the hot liquid outlet port and convergence space, as does the cold liquid entry port (see figure 1); the flow control means is capable of regulating the flow of hot and cold liquids entering the convergence space by opening the hot liquid entry port while closing the first cold liquid entry port and vice versa and is capable of completely closing the hot liquid entry port (28, see column 2 lines 17-19); a temperature sensing portion of the temperature sensing device is located in the outlet of the mixing chamber (see figure 1), and the movable distributing member is movable to a first position where the hot liquid inlet port communicates with the hot liquid transfer cavity which communicates with the hot liquid outlet port and at the same time the cold liquid inlet port communicates with the cold liquid transfer cavity which communicates with the first cold liquid outlet port (see column 2 lines 24-25); a

second position where the hot liquid inlet port communicates with the hot liquid transfer cavity which communicates with the hot liquid outlet port and at the same time with the liquid inlet port communicates with the cold liquid transfer cavity which communicates with the first cold liquid outlet port and the cold liquid transfer cavity also communicates with the second cold liquid outlet port, as would occur with the presence of the cold water passage in place of the hot water passage as disclosed in the rejection of claims 34 and 35; and a third position where the hot liquid inlet port and the cold liquid inlet port do not communicate with any outlet port (see column 2 lines 43-52).

Regarding claim 37, the movable distributing member is movable in an infinitely variable manner between said positions, as this is how standard thermal expansion mechanisms work (see column 2 lines 2-8).

Regarding claim 38, it is noted that the valve of Kovach et al does not explicitly disclose itself to maintain flow rate when there are substantially equal supply pressures of hot and cold liquids. Vinson explicitly discloses the adaptation of the valve to maintain temperature through variant supply pressure (see column 1 lines 40-43). It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to adapt Kovach et al appropriately according to Vinson in order to maintain constant flow rate through normal supply variance.

Regarding claim 39, as the only way for turning a valve completely off to not reduce flow rate is to not have intake beforehand, this limitation has been met.

Regarding claim 40, the flow control means is arranged so that in use it may be moved to a position effecting complete closure of the first cold liquid entry port (see column 2 lines 43-52).

Regarding claim 41, the convergence space has an axis, a cylindrical wall coaxial with said axis and wherein said flow control means includes a movable member capable of moving within a cylindrical chamber defined by said cylindrical wall (see figure 1).

Regarding claim 42, the movable member comprises a partition (36, 38, see figure 1 and column 1 lines 66-67) across the cylindrical wall, slidable to and fro along the axis to provide a seal and forming an orifice (apertures, see column 1 line 66) through the partition, the orifice providing indirect communication between the hot and cold entry ports.

Regarding claims 43 and 44, the first cold liquid entry port communicates with the convergence space via the cylindrical wall and the partition includes a further cylindrical wall which is shaped so that it forms a skirt (see figure 1) which may be positioned over the cold liquid entry port (24, 26, see figure 1 and column 1 lines 58-65). It is noted that Kovach et al does not explicitly disclose the complete halting of input into the mixing chamber of cold fluid, while the valve is still permitting some fluid flow. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to include this feature, as otherwise an input hot temperature which was within below the maximum temperature permissible would be further reduced when flowing through the valve.

Regarding claims 45-46, Kovach et al discloses the hot a hot liquid entry passage (14, see figure 1) which communicates with the convergence space at or adjacent and end of said convergence space via the hot liquid entry port (also see figure 1), and a chamber port is circular in cross-section and is coaxial with the axis, as can be seen from the fact that the hot and cold liquid chambers are annular and therefore the ports from them into the mixing chamber are annular also.

Regarding claim 47, the second hot liquid entry port includes a recess formed in the cylindrical wall lying substantially between surfaces which are normal to the axis, as can be seen from the annularity of the passage associated with the port.

Regarding claims 48 and 61, it is noted that Kovach et al does not disclose the movable distributing member to be able to be rotated. Vincent explicitly discloses the presence of a rotating adjustment means for adjusting the temperature to which the initial mixture is set (51, 174, 176, 137, see column 13 lines 45-53), this temperature adjustment means comprises a single operating lever in the valve of Kovach in view of Vincent. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to use the set temperature adjustment means of Vincent in the valve or Kovach et al in order to permit alteration of the set temperature without rendering it excessively complex.

Regarding claim 49, the temperatures sensing device is arranged within the body so that in use, the temperature sensing device expands in a direction along the axis on sensing an increase in liquid temperature and contracts along the axis on sensing a decrease in liquid temperature (see figure 1).

Regarding claims 50-54, the temperature sensing device includes a housing and a piston capable of expanding and contracting and thereby being moved axially to and fro with respect to the housing, coaxially with the axis, and the piston is positioned so that it can directly contact the partition (see figure 1). Additionally, Kovach et al includes a resilient bias which biases the partition and piston towards the most contracted position of the piston of the temperature sensing device and is a compression spring (springs, see figure 1). Further, the partition is cupped and the spring partially surrounds the piston, as can be easily seen in figure 1.

Regarding claims 55 and 56, Kovach et al explicitly discloses means for protecting the temperature sensing device from pressure above a pre-determined maximum from developing within the housing, with the protecting means comprising a second resilient bias which biases movement of the temperature sensing device relative to the body against expansion of the piston so that when a pressure within the chamber exceeds a pre-determined maximum pressure the temperature sensing device moves against the action of the second resilient bias by moving away from the seat (see column 2 lines 20-29).

Regarding claim 62, all the various limitations of claim 62 have been set forth above within this section.

Regarding claim 63, the method steps claimed are obviously present in the valve of Kovach et al in view of Vincent, as the performance of these steps is inherent in the combined structure.

5. Claims 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovach et al (US Patent No. 2,951,641) in view of Vinson (US Patent No. 2,526,099) and Grohe et al (US Patent No. 5,960,828), further in view of the applicant's own admission of prior art.

Regarding claims 58 and 59, the nesting of one member inside the other causing one to have a convex surface and the other to have a concave surface is clearly disclosed in the annular nature of the Kovach et al reference. Additionally, the spherical aspect of the valve is clearly disclosed on page 2 of the specification to be a common variant.

6. Claims 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovach et al (US Patent No. 2,951,641) in view of Vinson (US Patent No. 2,526,099) and Grohe et al (US Patent No. 5,960,828), further in view of Chamot et al (US Patent No. 6,257,493).

Regarding claim 57, it is noted that Kovach et al in view of Vinson does not explicitly disclose the use of a ceramic disc for the stationary distributing member and movable distributing member. Chamot et al explicitly discloses the use of ceramic discs in a thermostatic mixing valve (see column 2 line 52), and it would have been obvious to one of ordinary skill in the art at the time of the invention to use the ceramic discs of Chamot et al in the system of Kovach et al in view of Vinson in order to use common, more durable, and equivalently inexpensive materials in the system of Kovach et al in view of Vinson.

Regarding claims 58 and 59, it is noted that Kovach et al in view of Vinson does not explicitly disclose the valves to be shaped spherically. Chamot et al explicitly discloses the sphere to be a common valve shape (see column 2 lines 55-56), and it would therefore have been obvious to one of ordinary skill in the art at the time of the invention to form the appropriate chambers spherically as it is well known that it is easier for a chamber to withstand pressure when round.

Response to Arguments

7. Applicant's arguments with respect to claims 34, 35, 40, 41, and 63 have been considered but are moot in view of the new ground(s) of rejection.

The presence of a single lever operating the valve is explicitly present in the newly relied upon Grohe et al.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jarvis (US Patent No. 8,020,779) discloses a thermostatic valve and single lever mixer tap with integrated thermostatic mixing valve.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXIS COX whose telephone number is (571)270-5530. The examiner can normally be reached on Monday through Thursday 10:00a.m. to 7:30p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Swann can be reached on 571-272-7075. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J J Swann/
Supervisory Patent Examiner, Art Unit 3785

/AKC/